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Peer Group Support on the Treatment Adherence of Pulmonary Tuberculosis Patients

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Abstract. In recent years, pulmonary tuberculosis attracts the global concern as about 1.2 million people died of the disease by 2014. Treatment disobedience is one of the most factors causing the increase in mortality and morbidity rates. This study aimed to identify the effect of peer-group support towards treatment adherence in pulmonary tuberculosis patients. The study used quasi-experimental research with pre-test and post-test groups. The sample was 36 people selected with purposive sampling method. The independent variable was peer group support, while the dependent variable was the treatment adherence. The data were analyzed by Chi-square test and McNemar's test. The results of Chi-square test showed that the peer group support had significant effect to treatment adherence in taking medication time sub-variable ($p=0.005$) and the McNemar's showed a significant difference between pre-test and post-test in mentioned sub-variable ($p=0.004$). The results proved that peer group support could affect the medication time adherence on pulmonary tuberculosis patients. It can be concluded that peer group support can be used as an optional intervention to increase the obedience of pulmonary tuberculosis treatment in patients.

1. Introduction

Tuberculosis (TB) still become a major health concern as it had suffered for approximately 10 million people each year and become the top mortality factor worldwide with about 1.2 million death by 2014 [1]. The challenge of the TB treatment in the last decade is the emergence of multidrug resistance [2], caused by several factors, including poor regimen adherence [3]. Client compliance in TB treatment is the main factors in the TB treatment. Compliance in taking drugs can increase the completion rate of the treatment process as well as prevent the occurrence of drug-resistant [4].

In 2015, there were 330,910 tuberculosis cases in Indonesia, increased than the previous year of 2014 which amounted to 324,539 cases, with figures of 85% treatment success [5]. In the national level, East Java Province was one of the largest benefactors of tuberculosis cases. The province was ranked the second most cases tuberculosis after West Java. East Java Public Health Office reported that the cases of tuberculosis in 2015 reached 44,077 people where 2,173 of sufferers were children [5]. In 2016, the Public Health Office of Bangkalan Regency revealed that there was an increase in the number of tuberculosis cases as many as 1,248. Among the 12 public health centers scattered in Bangkalan, Klampis was a district with one of the most cases [6]. A preliminary study conducted in clinics in Klampis area shows that the number of pulmonary tuberculosis sufferers in 2016 was 151 cases. One of the factors that caused prolonged treatment was non-compliance with medical treatment.

The discipline of the patient in carrying out the treatment needs to get support either from his family or fellow sufferers, who can remind each other to take medicine at any time. Social support from family and friends support groups can be established to help patient adherence to treatment [7]. Some effective efforts in improving the adherence of TB patients are peer-group counseling and



individualized management plans [8]. The peer-based intervention is also associated with a significant adherence change [9], [10]. Moreover, the influence of peers towards people's attitudes, interests, and behavior, in some cases, is greater than the influence of the family [11]. A study stated that peer-group support also has an influence on the knowledge, attitude, and quality of life of the pulmonary tuberculosis patients [12].

This study aimed to identify the effect of peer group support towards the treatment adherence of pulmonary tuberculosis patients.

2. Research Methods

The study used quasi-experimental methods with pre-test and post-test groups design. The sample size was 36 respondents divided into two groups, control and treatment with each had 18 respondents. The sampling method was purposive sampling. The inclusion criteria were TB patients who obtained advanced treatment (3-6 months), aged 21-60 years old, and could read and write. The exclusion criteria were TB patients with special condition, such as pregnant, and have complications of hemoptysis, bronchiectasis, collapse, cardiopulmonary insufficiency and spontaneous pneumothorax. The research was conducted in a clinic in Bangkalan Regency, Madura Island, East Java, during June-July 2017.

The independent variable was community-based peer group support which conducted four times in two weeks. The peer group support took 30-45 minutes each meeting with four agendas, including checking in, problem presentation, idea sharing, implementation planning and checking out. Meanwhile, the dependent variable was treatment adherence. The data were collected using a questionnaire of treatment adherence and observation forms TB 01 and TB 02. The questionnaires contain four nominal questions with binary answer. The data were analyzed using the chi-square test and McNemar's test with a significant level of less than 0.05. This research has obtained the approval of the Health Research Ethics Committee of the Faculty of Nursing, Universitas Airlangga, Indonesia, with the number of 400-KEPK.

3. Results

All respondents in this study were patients who were undergoing treatment as many as 36 respondents, 18 of which were in the control group while the other 18 were in the treatment group. Characteristics of respondents are described in Table 1.

Table 1 shows that the majority of control group respondents were male (61.2%). Also, the age range was relatively equal in distribution for all respondents. The most degree obtained was a junior high school (72.2%). Also, the majority of occupation was construction labors and farmers (44.4%), and the most income was in the range of IDR 1,000,000 – 2,000,000 (61.2%). In addition, the number of members living in the same house was mostly 2-4 people (89.0%).

Meanwhile, in the treatment group, the majority was female (55.6%). The age range was also relatively equal in distribution. Also, the majority of education completed was an elementary school (55.6%). Most of the respondents in the treatment group were construction labors and farmers (66.6%). The most income range was also IDR 1,000,000 – 2,000,000 (72.2%). In addition, the number of family members living in the same house was mostly 2-4 persons (66.6%).

Table 2 shows the results of McNemar's Test on both groups and compares the condition pre-test and post-test. The respondents had a good adherence in most of the parameters. The only parameter which shows the significant change was medication time of treatment group. Before the intervention, there were 12 respondents who consumed medication after a meal (66.7%). After the treatment, the number was significantly decreased to only three (16.7%). The McNemar's test between pre and post-test shows significant result with a p-value of 0.004 ($\alpha \leq 0.05$). In addition, there was actually a change in the way the patients take medicine between pre and post-test in the treatment group. However, the change was not significant as only one respondent who changes their behavior.

Table 3 reveals the results of Chi-square test between the post-test of medication time in both groups. The statistical analysis shows that the treatment group had significant change over the peer group support intervention with a p-value of 0.005 ($\alpha \leq 0.05$).

Table 1. Demographic characteristics (n=36).

Demographic	Control		Treatment	
	f	(%)	f	%
Gender				
Male	11	(61.2)	8	(44.4)
Female	7	(38.8)	10	(55.6)
Age				
< 18 years old				
18 – 35 years old	7	(38.8)	5	(27.8)
36 – 50 years old	6	(33.4)	7	(38.8)
> 50 years old	5	(27.8)	6	(33.4)
Education				
Elementary school	4	(22.2)	10	(55.6)
Junior high school	13	(72.2)	6	(33.4)
Senior high school	1	(5.6)	2	(11.0)
Occupation				
Unemployed	6	(33.4)	5	(27.8)
Entrepreneur	4	(22.2)	1	(5.6)
Others (Labors and Farmers)	8	(44.4)	12	(66.6)
Salary				
<IDR1,000,000	3	(16.6)	4	(22.2)
IDR1,000,000—2,000,000	11	(61.2)	13	(72.2)
>IDR2,000,000	4	(22.2)	1	(5.6)
Family Members				
2-4 persons	16	(89.0)	12	(66.6)
> 5 persons	2	(11.0)	6	(33.4)

Table 2. McNemar's test of pre-test and post-test on control and treatment group (n=36).

Parameters	Control (n=18)		p-value	Treatment (n=18)		p-value
	Pre	Post		Pre	Post	
	f (%)	f (%)		f (%)	f (%)	
How to take medicine						
Once a time	18 (100)	18 (100)	1.000	17 (94.4)	18 (100)	1.000
Couple times	-			1 (5.6)	-	
Medication time						
1 hour before meal	11 (61.1)	11 (61.1)	1.000	6 (33.3)	15 (83.3)	0.004
After meal	7 (38.9)	7 (38.9)		12 (66.7)	3 (16.7)	
Medicine dose						
Appropriate to weight	18 (100)	18 (100)	1.000	18 (100)	18 (100)	1.000

Inappropriate to weight	-	-	-	-	-
Schedule adherence					
On schedule	18 (100)	18 (100)	1.000	18 (100)	18 (100) 1.000
Not on schedule	-	-	-	-	-

Table 3. Chi-square Test on control and treatment groups in post-test Medication Time (n=36).

Medication Time	Control (n=18)	p-value	Treatment (n=18)	p-value
	f (%)		f (%)	
1 hour before meal	11 (61.2)	0.346	15 (83.4)	0.005
After meal	7 (38.8)		3 (16.6)	

4. Discussion

Most of the patients before the given peer group intervention support has a pretty good adherence rate. It is possibly caused by the medical officer at the clinic who provide them sufficient information as well as patients who have good self-management [4], [8]. The only parameter with an adherence level of less than 100% was the medication time. There were patients who repeatedly forgot their medication schedule, but some of those had a reminder system such as alarm so they still can make it [4]. The respondents sought on average already know about how to take drugs, but there is still a less familiar to the time of taking the drug. Although the statistics did not experience a significant change, the result shows a change that occurs in the way of taking medication and time taking the drug treatment group.

A behavior, including treatment adherence behavior, can be developed following stimulus as the starting point. The stimulus can come from outside (external) or inside (internal) [13]. The external stimulus can be received in the forms of supports, learned materials, as well as environment [4], [10], [14]. In addition, a person's adherence to treatment is also influenced by the length of they received the particular treatment [15]. It can answer why most patients have good adherence. Patients in the treatment of advanced phases tend to have a degree of non-compliance higher than patients in the intensive phase of treatment. Because the patient feel healed and the symptoms have started to wane, and the body had started to improve.

After the treatment, there was an increase in adherence to the way of taking medication on time in the treatment group. Support from others such as health professionals, families and friends can change people's behavior and find solutions to their problems [4]. Such support can change the patient's knowledge and attitude especially in terms of taking medication time [12]. The influence of peers on patients' attitudes, interests and behavior can be greater than the influence of family [11]. However, the successful rate of the intervention was not 100 percent because the level of adherence can also be affected by related individual self-acceptance and their sense of urgency [16].

Treatment adherence is a key to the completion of TB treatment [17]. A complete adherence can decrease potential TB cases in the future up to 60%, reduce the cost of TB treatment, and health burden [18]. Thus, the patients must be overcome with their treatment, and their family and relative have to provide support to them.

5. Conclusion

The study have concluded that the peer group supports influence treatment adherence of pulmonary TB patients, especially in terms of medication time. The treatment adherence has changed and

increased after the intervention of peer group support. The support is part of an external stimulus which can develop a particular behavior in human.

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